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Group Social Climate and Individual Peer Interaction: Exploring Complex Relationships on Extended Wilderness Courses

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Abstract

This study explored how adolescents' perception of the social climate on wilderness expedition courses related to changes in how they approached peer interactions. Contrary to the hypothesis, on average, their orientation toward adaptive peer interaction decreased (n=251) from pre- to postcourse test. The individual level predictors of change in peer interactions were student's perception of group cohesion, task orientation, instructor control; and at the group level, instructor perception of the fun or playfulness of the course, as well as the course make-up (i.e., having participants who have been on previous similar experiences). This research contributes to knowledge of how the social climate on outdoor education courses facilitates adaptive shifts in social motivation for youth.

Keywords: *peer interaction, achievement goals, adolescent development, social climate*

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A primary focus of outdoor courses has long been to create positive group experiences that build social competence among members (Todd, O'Connell, Breunig, Young, Anderson, & Anderson, 2008; Walsh & Golins, 1976). Broader educational research suggests that developing social competence creates a positive orientation toward the social world that spurs adaptive beliefs and behaviors that facilitate adjustment in a variety of contexts (Mouratidis & Michou, 2011; Ryan & Shim, 2006, 2008). Related research also strongly shows that individuals' motivations are influenced by elements of the classroom climate (Patrick, Ryan, & Kaplan, 2007). In contrast, it is not well understood how various contextual features such as social climate interact with and influence individuals' social motivations and outcomes on outdoor courses, even though these are often crucial claims of program effectiveness. Better understanding how the social climate on wilderness expedition courses relates to adolescents' social motivations could therefore improve programs' abilities to facilitate more adaptive forms of peer interaction.

A growing body of evidence suggests that organized nonformal activities structured and supervised by adults and that provide opportunities for skill building, foster a variety of long-term benefits for youth including greater educational, civic, and occupational success (Gardner, Roth, & Brooks-Gunn, 2008; Mahoney, Larson, & Eccles, 2005). Nonformal youth settings such as Boys & Girls Clubs, 4-H programs, and Outward Bound-style wilderness courses are examples of such programs, and it is believed that meaningful collaboration with peers in such programs contributes to beneficial outcomes (Costello, Toles, Spielberger, & Wynn, 2001; Duerden, 2010; Larson, 2000). A major element in the success of these programs is believed to be the motivations they foster as well as the promotion of positive peer relationships. However, the connection between youths' goals for their social interactions and specific elements of the setting or social climate of the experience has not been examined extensively.

Authors in the youth development and activity literature have also observed different motivational patterns among participants in nonformal educational settings such as those listed above, and argue that these patterns are integral to program effectiveness. Essentially, some nonformal settings encourage youths toward different motivational patterns in the social domain, their social climates helping to establish more personally meaningful relationships with peers, and contribute to shared goals in valuable ways. This stands in contrast to settings such as school, where opportunities for positive peer social interaction and meaningful contributions to collaborative tasks often are more constricted (Costello et al., 2001; Larson, 2000). One can extrapolate from this literature an important relationship between individuals' motivations, the ways peer relations are established, maintained, and perceived by members, and practical conditions or tasks that facilitate collaboration, as well as the possible role of extended wilderness expeditions. It is hoped that studying this "triumvirate" of motivation, social climate among peers, and environmental or programmatic

conditions will reveal features of nonformal youth programs—here, extended wilderness courses—that can be emphasized or adapted to better facilitate desired outcomes.

The current study explored how adolescents' perception of the social climate on wilderness expedition courses related to changes in how they approached peer interactions. This research examined predictors of change at both an individual and group level and therefore contributes to knowledge of how the social climate on outdoor education courses is perceived and facilitates adaptive shifts in social motivations for youth.

Review of Related Literature

Important Outcomes in Outdoor Adventure Education's Recent History

With the expansion of programs and increasing interest from policymakers and the public came the need to explain the value and societal worth of outdoor trips (Hattie, Marsh, Neill, & Richards, 1997). Soon after Walsh and Golins' (1976) unpublished essay came an early and still largely unmatched large-scale study of experiential education by Conrad and Hedin (1981), which identified specific characteristics of participants' experience (i.e., relationship with adults, autonomy, challenge, etc.) that contributed more to developmental benefits than program characteristics and student characteristics combined (Conrad & Hedin, 1981). They noted and emphasized that developing social relations with others greatly influenced personal and social development. Subsequent studies have largely taken the effect of "the group" for granted but have documented outcomes such as enhancement of self-concept, leadership, academic, interpersonal gains, personality, and adventuresomeness (Hattie et al., 1997). Program characteristics such as the physical environment, activities, processing, the group, instructors, and the participant are also known to lead to how outcomes are achieved (McKenzie, 2000). What is more complex and more difficult to find agreement on is what the appropriate outcome(s) in the social domain are and how they are best reached and quantified.

Motivation in Education

Over the past 30 years, achievement goal theory has emerged as a prominent approach to understanding achievement motivation (Meece, Anderman, & Anderman, 2006), and is especially useful for analyzing the influence of classroom environments on students' motivation and learning patterns (Anderman & Maehr, 1994; Meece et al., 2006; Midgley et al., 1998). Achievement goal orientations, a framework that fits within broader social cognitive perspectives (Bandura, 1997; Locke & Latham, 2002), proposes that as learners are motivated by goals and that as they achieve their goals, their motivation is strengthened, leading to skill acquisition an adoption of new goals (Schunk, Pintrich, & Meece, 2008).

Achievement goal theory focuses on goals involving the demonstration or development of competence in various domains. As part of the theoretical framework of achievement goal theory, social achievement goals focus on the achievement of social competence and pertain to the orientation to the social world that individuals adopt in order to attain social competence (Ryan & Shim, 2008). A basic premise of this view of social achievement goals is that regardless of what an individual is looking for in a social situation, it is likely they also desire a feeling of social competence. In order to obtain this goal of a feeling of competence, some individuals are (a) motivated to *develop* their social competence by developing relations with others in an adaptive peer interacting manner, while other individuals seek to (b) *demonstrate* their social competence, or (c) simply try to *avoid* looking incompetent. Each of these orientations has implications for individual's beliefs and behaviors (Ryan & Shim, 2008).

This paper will focus on social development goals, the adaptive form of social achievement goals, where individuals with this orientation to the social world focus on developing social competence *with* peers. With this orientation to the social world, individuals' attention is on learning new ideas, growth, and improvement. Success is self-defined and judged by whether an individual is improving social skills, deepening the quality of relationships, or developing one's social abilities in general (Ryan & Shim, 2006, 2008; Shim, Cho, & Wang, 2013). Findings support the idea that focusing on developing social competence with a focus on improvement and self-referenced standards of success appears to help create a positive orientation toward the social world, which sets in motion adaptive beliefs and behaviors that facilitate adjustment in a variety of settings (Mouratidis & Michou, 2011). For this paper, social achievement goals have been operationalized as *peer interaction,* since individuals' social goals determine the manner of their peer interaction.

Social Climate

Studying various specific aspects of social climate among peers, as predictors of individual goals for peer interaction, will reveal some unique features of extended wilderness courses that can be emphasized or adapted to better facilitate desired outcomes. Prior pilot work established key areas of the social climate on wilderness courses (Mirkin, 2012; Mirkin & Middleton, 2014). Through the combination of information gathered through the quantitative data followed by analysis of interviews (Mirkin & Middleton, 2014), the Group Environment Scale (GES) (Moos, 2002) was narrowed to the most influential aspects of the social climate of outdoor courses (Table 1) and used in this study.

Table 1

Group Environment Scales utilized for Current Research on Social Climate

Relationship Dimension
Cohesion: The members' involvement in and commitment to the group and concern for friendship they show for one another
Leader Support: The amount of help, concern, and friendship the leader shows for the members

Personal Growth Dimension
Independence: How much the group encourages independent action and expression among members
Task Orientation: The emphasis on completing concrete, practical tasks and on decision making and training

System Maintenance and Change Dimension
Order and Organization: The formality and structure of the group and the explicitness of rules and sanctions
Leader Control: The extent to which the leader directs the group, makes decisions, and enforces rules
(Definitions taken from Moos, 2002)

Each of these areas of the social climate has been previously researched within outdoor adventure experiences. Outdoor courses have the creation of positive group experiences as a primary focus (Todd et al., 2008). Several researchers have specifically stated that *cohesion* plays an important role in a positive group environment (Breunig, O'Connell, & Todd, 2007; Sharpe, 2005) and individual perception of development (Sibthorp, Paisley, & Gookin, 2007). *Leader control and leader support* have been cited as critical components of outdoor program success (Raiola, 2003; Sibthorp et al., 2007). *Independence*, which is similar to the concept of autonomy, has been cited in Outward Bound research as related to intrinsic motivation (Wang, Ang, Teo-Koh, & Kahlid, 2004). Order and Organization and Task Orientation both relate to the idea that ideally, organizations create structure and an incremental and well-sequenced problem solving task as central in outdoor courses (McKenzie, 2003; Walsh & Golins, 1976).

Summary

Based upon the established idea that social climate influences individual motivations (Patrick et al., 2007) combined with previous identification of the importance of the social domain on outdoor courses (Conrad & Hedin, 1981;

Hattie et al., 1997; Walsh & Golins, 1976), this study attempted to quantify individual changes in motivation toward adaptive forms of peer interaction in a manner similar to what is done in the traditional school setting. In examining individual peer interactions, the relationship to the social climate was explored in order to help understand what about the social climate on outdoor trips may help individuals achieve adaptive forms of social change.

Method

Participants and Procedures

This quantitative, survey-based study investigated a sample of 251 students from 45 National Outdoor Leadership School (NOLS) ranging from 14–30 days, taking place in the Rocky Mountains, Pacific Northwest, and Alaska. Participants ranged from age 14 to 20, and were part of NOLS courses during the summer of 2012. Prior to their NOLS course, all selected summer 2012 NOLS students were sent a link with Ryan and Shim's (2006) survey assessing social achievement goal orientation, operationalized here as peer interactions, prior to their course. At the close of courses, to better understand the context of the experience and potential changes in peer interactions, participants were given the *Real Form* of the Group Environment Scale (GES) (Moos, 2002) with the social achievement goal orientation survey in addition to Instructor Reports of Course Characteristics. Analysis used multilevel modeling (MLM) to enable data from this study to be analyzed accurately by representing individuals (level 1) nested in their outdoor adventure education courses (level 2).

Pretests were administered through Qualtrics with emails sent from NOLS Research to participants providing an email link to the pre course survey, one month prior to the start of a course. The pretest compiled basic demographic information such as gender, age, ethnicity, and previous NOLS courses. Additionally, the duration of the experience was included through the identification of the course. Posttests were administered at the close of NOLS courses. They were packed in to courses with their final re-ration. Instructor reports were completed at the close of the trip, while students were completing their course evaluations and surveys.

Measures

Social Achievement Goals were the primary outcome variable in this study. The pre- and post-test included Ryan and Shim's (2006) 18-question Social Achievement Goals survey, which uses a 5-point Likert-type scale to assess social goal orientations. This instrument was developed for classroom use for students of elementary to college level. It was piloted on outdoor courses in the summer of 2010, as well as spring and summer of 2011 and found to be an insightful tool for assessing changes in motivation for peer interaction in this context.

The Group Environment Scale (GES) contains the primary predictors in this study, elements of the social climate. This survey instrument was designed to measure the relevant dimensions of the construct of the social climate of group settings. The GES was created through theoretical and empirical methods for the purpose of helping researchers discover why settings differ so greatly in the quality of relationships, different instructional strategies, and levels of organization and clarity (Moos, 2002). In order to make the GES language appropriate for NOLS courses, the word "group" was changed to "course," "member" was changed to "student," and "leader" was changed to "instructor." During the administration of the posttest, 10 of the 54 items were accidentally left off the form during scantron construction. These questions were eliminated from the pre- and posttest for consistency.

For each course, there was an Instructor Report of Course Characteristics. To create this brief survey, input was solicited input from a panel of experts obtaining feedback on aspects of a course that outdoor professionals, graduate students, and professors felt affected the social climate, which could be objectively reported by instructors and contribute to the understanding of the social climate on a specific course. Course characteristics that were determined to be most influential in the group experience included physical difficulty, rain/uncomfortable weather, food quality/quantity, insect issues, and level of fun / playfulness of the course, all measured with a 1–5 Likert-type scale, as well as a question about how frequently games were played during each week of the course.

Results

Analysis of all data began with exploratory and descriptive analyses and then proceeded to fitting appropriate multilevel models. A multilevel approach to data analysis enabled the integration of this nested information into the larger picture of the NOLS sample (Raudenbush & Bryk, 2002) by representing individuals (level 1) nested in groups (level 2).

For the social achievement goals questionnaire, exploratory factor analysis was performed to assure all factors grouped together as predicted. Using the Principal Axis Extraction Method and Varimax Rotation, with criterion of Eigenvalues greater than one, all three factors were retained for both pre- and posttests, but three items were eliminated to increase reliability. In the final scales, social development goals (6 items) had Cronbach's alpha of .77 for the pretest and .83 for the posttest; social demonstration approach goals (4 items) had α =.75 for the pretest and .81 for the post test; while social demonstration avoid goals (5 items) had an α = .82 for the pretest and .85 for the posttest.

Changes in Social Development Goal Orientation

In assessing the complete sample (n=251), a paired samples t-test compared differences in social development goal mean scores before and after the

course. Contrary to the hypothesis, on average, scores were significantly higher before these outdoor courses (M = 4.22, SD = .58) than after the experience (M = 4.11, SD = .73), $t(250) = 2.64$, $p < .05$. This reveals that on average, after their courses, students were less motivated (Figure 1.) toward developing meaningful relationships with their peers, and their focus had shifted away from learning, growth, and improvement of relationships. While an average change of -.11 is not a large shift, it does represent a significant trend away from the adaptive social development goal orientation, on average, for these adolescent participants.

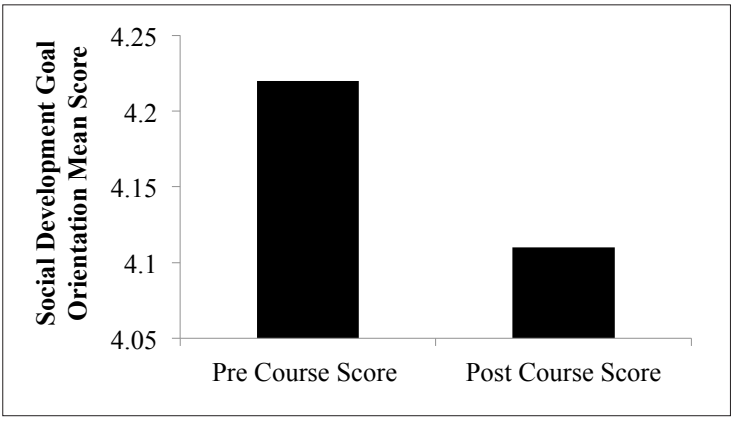

Figure 1. Pre- and Postcourse Social Development Goals Orientation Means Score

Subsequent to exploratory analysis of differences between pre- and posttests, a series of multilevel models was fit to predict change in social development goal orientation. The change scores for social development goal orientation were computed by subtracting posttest from pretest scores. Analysis proceeded with the creation of an unconditional model, which contains no predictors; subsequent models added predictors to see their impact and significance within the model.

The estimated fixed effect for this model, $\hat{\gamma}_{00}$, representing the average trip-level change in social development goal orientation score, was -.11 (p<.05), confirming what was found through the previously mentioned paired samples t-test; the average course level social development goal orientation change score had a decrease of .11 from pre- to postcourse. The estimated random effects were $\hat{\sigma}_2 = .43$ ($p < .001$) and $\hat{\tau}_{00} = .03$ ($p > .10$), meaning that although there was statistically significant variation in change in social development goal orientation between participants within courses, there was very little variance across courses in this sample. Additionally, with a variance component for course of .03, very little variation in course mean could be "explained" by course level (level 2) predictors. Essentially, there was variability across individuals within

courses, but the average change in social development goal orientation was not systematically different across courses.

To conclude, the fixed effect was statistically significant, demonstrating there was a significant average decrease in change of social achievement goal orientation score, however, there was not significant variability across courses. The fact that the within-course random effect was statistically significant meant that this research was able to predict variability using level one and two predictors in subsequent analyses.

Individual Perception of Social Climate and Changes in Social Development Goals

The next phase of analysis investigated which aspects of the social climate relate to participants' social development goal orientation change score. A random coefficient model was fitted with individual perception of group cohesion as the level-1 predictor for each aspect of the social climate. Likely due to the lack of variability within courses, the models did not converge when the effects of level-1 predictors were estimated as random effects; therefore, in the following models the effects of level-1 predictors were fixed.

Continuing with the analysis of cohesion as the level-1 predictor, the fixed effect in the above model, $\hat{\gamma}_{00}$ = -.10 (p<.05), meaning that the average course-level social development goal orientation change score was -.10 for the mean level of cohesion (standardized cohesion score is centered on zero). With a relaxed alpha level, (p<.10) the estimate of $\hat{\gamma}_{10}$ = .06 indicated that on average, people who differ by one point in perception of cohesion on their course differ by .06 points in social development goal orientation change score.

The only other aspect of the social climate that was a significant predictor of changes in social development goal orientation was perception of task orientation. Similar to perception of cohesion, with a relaxed alpha level, (p<.10) the parameter estimate of task orientation, $\hat{\gamma}_{40}$ = .10 indicated that on average, people who differ by one point in perception of task orientation on their course differ by .10 points in social development goal orientation change score.

All results are listed in a Taxonomy of Level 1 Models (Table 2). It is evident from the goodness-of-fit statistics for Model 7 that the fixed effect leader control improves the goodness-of-fit statistics in a more substantial way than any other predictor; however, it is not a significant predictor (p>.10). In Model 12, cohesion, task orientation and leader control are fixed effects; goodness-of-fit improves compared to all other models that have significant predictors, as demonstrated by the -2LL measure of goodness-of-fit reducing from the unconditional model with a -2LL of 511.47 to 465.20 when cohesion, task orientation, and leader control are added. Comparing estimates of within-course variance (σ^2) from the unconditional and conditional models, it was found that the inclusion of student perception of cohesion, task orientation, and leader control has "explained" 9.3% of the "explainable" variation within courses.

Table 2

Taxonomy of Level 1 Models

	Parameter	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	**Model 12**
Fixed Effects													
Intercept	γ00	-.11*	-.10*	-.11*	-.11*	-.11*	-.10*	-.10*	-.10*	-.10*	-.09~	-.09~	**-.09~**
		(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	**(0.05)**
COHESION_C	γ10		0.06~						0.05	.06~	.06~	.07*	**.06~**
			(0.03)						(0.03)	(0.03)	(0.03)	(0.03)	**(0.03)**
LEADERSUPPORT_C	γ20			0.05						0.03	0.05		
				(0.06)						(0.06)	(0.06)		
INDEPENDENCE_C	γ30				0.04								
					(0.05)								
TASKORIENT_C	γ40					.10~			0.09				**0.09**
						(0.06)			(0.06)				**(0.05)**
ORDERORG_C	γ50						0.02						
							(0.03)						
LEADERCONTROL_C	γ60							-.04			-0.03	-0.03	**-0.03**
								(0.03)			(0.03)	(0.03)	**(0.03)**
Variance Components													
Level 1: Within-Course	σ^2_e	.43***	.43***	.43***	.42***	.42***	.43***	.40***	.42***	.43***	.40***	.40***	**.39*** **
		(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	**(0.04)**
Level 2: Between-Course	τ00	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.02	0.02	**0.02**
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	**(0.02)**
% reduction in within-course variance			NA	NA	2.33	2.33	NA	6.98	2.33	NA	6.98	6.98	**9.3**
% reduction in between-course variance			NA	NA	NA	NA	NA	33.33	NA	NA	33.33	33.33	**33.33**
Goodness-of-fit													
-2LL		511.47	501.76	507.40	507.58	507.97	506.89	477.83	499.25	499.22	464.44	467.62	**465.20**
AIC		517.47	509.76	515.40	515.58	515.97	514.89	485.83	509.25	509.22	476.44	477.62	**477.20**
BIC		528.03	523.78	529.44	529.63	530.05	528.94	499.82	526.78	526.71	497.27	495.02	**498.09**

~ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Continuing to add various predictors, aspects of the social climate, does not improve the goodness of fit in a meaningful way and there are no other significant predictors until course level predictors are added (Table 2).

Interestingly, it appears that individual perception of cohesion and task orientation was related to increasing social development goal orientation change score while perceived leader control was negatively related. According to this model, courses with higher perceptions of group cohesion and task orientation combined with lower perceptions of leader control tend to have higher changes in their social development goal orientation change score.

Course Level Social Climate and Social Development Goal Orientation

The level-2 predictors in this study were the individual perceptions of the social climate (i.e., cohesion, leader support, leader control, independence, task orientation, and order and organization) at the close of courses aggregated to the group level (i.e., group mean scores for each course), as well as the average previous experience of participants, group mean age of the course participants, ratio of gender, ethnicity, and course duration. A series of means as outcomes models were fitted to determine if there were a relationship between course level aggregated scores and average social development goal orientation change score.

In this section, the only significant course-level predictor was previous NOLS course experience $\hat{\gamma}_{07} = 1.04$ ($p<.05$). This was interpreted as courses that differed by one point in mean previous NOLS experience of participants differed by 1.04 points in average social development goal orientation change score. Experience is measured with a score of one referring to an individual's first experience with NOLS and two their second. Fourteen of 251 participants had done one previous NOLS course. No participants had done more than one previous course. Essentially, average change in social development goal orientation was larger when participants were in groups with other students that had previous NOLS experience. This could mean that the social development goal orientation decreases less or not at all when there are students on the course with previous NOLS experience.

Instructor Reports of Course Characteristics Relationship to Social Climate

To better understand what was occurring in aspects of the social climate of these courses, course characteristics from instructor reports were investigated as predictors of perceptions of the social climate, focusing on those aspects that emerged as influencing the social achievement goals of students. The instructor reports contained measures of "adversity," which was compiled from instructor perception of physical difficulty for students, amount of rain, amount of uncomfortable weather, food quantity, food quality, and bug issues, as well as the instructors report of "playfulness/fun" and an approximate measure of frequency of games played throughout each course. These predictors were first investigated through multiple regression analysis to determine what course

characteristics predicted the perceptions of the social climate included in the final model.

Multiple regression analysis where individual perceptions of post course cohesion were regressed on various predictors revealed that "fun/playfulness" predicted increased perception of cohesion, $\beta = .18$, $t = 2.71$, $p < .01$, as did 'Uncomfortable Weather', $\beta = .14$, $t = 2.03$, $p < .05$. This model explained 4.2% of the variance in cohesion, $F(2, 219) = 4.81$, $p < .01$. This demonstrates that when students perceived higher levels of cohesion within their course group it had a positive relationship to changes in social development goal orientation. This regression analysis found that on average, when instructors reported their groups being more fun or playful, cohesion increased. Similarly, when students faced uncomfortable weather, cohesion also increased, regardless of what level of uncomfortable weather students' experience. Upon adding other predictors, none were significant.

Similar procedures were performed to determine what predicted student perception of task orientation. Task orientation was regressed on several areas from the instructor reports meant to conceptually cause adversity, and then what would typically be thought of as more positive influences were added to the model. The only significant predictor of increased task orientation was "Rain," $\beta = .17$, $t = 2.54$, $p < .05$. As rain increases, students perceive their social climate to be more task oriented. This model explained 2.8% of the variance in task orientation, $F(1, 225) = 6.45$, $p < .05$. No other predictors were significant.

Lastly, predictors of leader control were investigated. Various predictors on individual perceptions of post course leader control were regressed. It was found that the number of games played throughout the course negatively predicted increased perception of leader control, $\beta = -.16$, $t = -2.49$, $p < .05$, while "adversity," which was compiled of instructor perception of physical difficulty for students, amount of rain, amount of uncomfortable weather, food quantity, food quality, and bug issues, positively predicted leader control, $\beta = .14$, $t = 2.17$, $p < .05$. This model explained 5% of the variance in leader control $F(2, 220) = 5.74$, $p < .01$. No other predictors were significant in this model.

As stated previously, on average, leader control had a negative relationship with changes in social development goal orientation, meaning that less leader control has what can be thought of as a positive impact on the social climate of a course, with regard to social development goals. This regression analysis found that on average, as adversity increased, so did leader control and that an increased number of games played by the group were related to reduced leader control.

Course Characteristics Relationship to Changes in Social Development Goals

To address the influence of course characteristics on participant social development goals, the information gathered from instructor reports were also utilized as additional level-2 predictors. A combination of physical difficulty,

weather, insect issues, and food issues were combined to make an "adversity scale" for each course in addition to these aspects being analyzed individually. Each predictor was first tested in a means as outcomes model and if significant added to the best-fit model from the previous question to determine their significance within the model. Finally, the complete model was compiled with a composite model of level-1 and 2 predictors and presented through the construction of fitted plots to aid in interpretation.

In looking at the means as outcomes analysis of instructor perceptions of each course level predictor, it is evident that food and fun/playfulness serves a vital role in changes in social development goal orientation. The only significant predictors of social development goal orientation were the reversed idea of food quality (meaning lower number is higher quality food) $\hat{\gamma}_{015} = -.09$ ($p<.10$), the reversed idea of food quantity (meaning lower number is more food) $\hat{\gamma}_{016} = .12$ ($p<.05$), and fun/playfulness of the course $\hat{\gamma}_{017} = .11$ ($p<.01$). Essentially, this revealed that when instructors believe their students have higher quality food and an adequate quantity of food without being too much, as well as perceiving their group as fun or playful, their students have greater changes in their social development goal orientation.

When the above mentioned significant predictors were added to the best fit model from the previous section, only the additions of fun/playfulness $\hat{\gamma}_{017} = .11$ ($p<.01$) contributed to improving the goodness-of-fit and reduced within course variance (Table 3). This best-fit final model inferred that on average, courses that consist of a greater proportion of students with previous NOLS course experience in which the instructors believe students are having fun and being playful during the course, where students have higher perceptions of cohesion and task orientation, combined with lower perceptions of leader control were more likely to result in positive changes in social development goal orientation.

The reduction in the within-course variance component represented a 16.28 percentage point decline in within course residual variance between the Unconditional Model and Model 30. It could be said that approximately 16.28% of the "explainable" variance in within-in course changes in social development goal orientation is explained by previous NOLS course experience of participants, the fun and playfulness of the course, as well as student's perceptions of cohesion, task orientation, and leader control.

Discussion

All of the conclusions drawn from this data make logical and intuitive sense while further providing explanation of key areas of the social climate in this particular setting, central to which is believed to be the role of adversity or challenge in fostering camaraderie, aided by leaders who gradually withdraw control so groups increasingly feel responsible for their own achievements.

Table 3

Taxonomy of Models with Best-Fit Final Model

	Parameter	Model 26	Model 27	Model 28	Model 29	**Model 30**	Model 31	Model 32
Fixed Effects								
Intercept	γ00	-0.10*	-0.08~	-0.09*	-0.09*	**-0.06**	-0.06	-0.07
		(0.04)	(0.04)	(0.04)	(0.04)	**(0.04)**	(0.04)	(0.04)
COHESION_C	γ10					**0.04**	0.04	0.04
						(0.03)	(0.03)	(0.03)
TASKORIENT_C	γ40					**0.09**	0.09	0.09
						(0.05)	(0.05)	(0.05)
LEADERCONTROL_C	γ60					**-0.03**	-0.03	-0.02
						(0.03)	(0.03)	(0.03)
Experience_C_mean	γ07					**1.38****	1.26*	1.71***
						(0.45)	(0.49)	(0.47)
FoodQuality_C	γ015	-.09~						-0.11
		(0.05)						(0.05)
FoodQuantity_C	γ016		.12*				0.04	
			(0.06)				(0.06)	
Fun_C	γ017			.11**		**.11****	.13*	.11*
				(0.04)		**(0.04)**	(0.04)	(0.04)
Variance Components								
Level 1: Within-Course	σ^2_ε	.39***	.39***	.39***	.39***	**.36*****	.36***	.36***
		(0.04)	(0.04)	(0.04)	(0.04)	**(0.03)**	(0.03)	(0.03)
% reduction in within-course variance		9.30	9.30	9.30	9.30	**16.28**	16.28	16.28
% reduction in between-course variance		NA	NA	NA	NA	**NA**	NA	NA
Goodness-of-fit								
-2LL		429.58	428.67	425.82	431.08	**352.74**	397.92	394.40
AIC		437.58	436.67	433.82	439.08	**368.74**	415.92	412.40
BIC		451.26	450.36	447.50	452.77	**394.76**	446.38	442.86

~ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Fun/playfulness of the course and uncomfortable weather are both aspects that bring course groups together, and therefore it seems logical they predict students' perception of cohesion. Increased rain on a course would logically increase the group's task orientation; they need to get things done to stay warm and dry. Lastly, leader control, a negative predictor of changes in social development goal orientation, was negatively predicted by playing a greater number of games, and positively predicted by adversity. When there is increased adversity on a course, on average, students perceive their instructors taking greater control, possibly to help their group succeed, and also likely as a risk management strategy. The facilitation of games seems to convey the impression that instructors imparted less control.

While all of the results related to the predictors make intuitive sense, the primary results contradict the hypotheses that social development goals (i.e. how participants approach interactions with peers) would change in an adaptive direction during these extended wilderness courses. On average, students' orientation toward social development goals decreased at a level that cannot be attributed to chance. The concern here is that something(s) about their participation in an extended wilderness course altered students' social motivation so they became oriented away from a social development goal orientation. Moving away from this orientation during their course can be understood as a maladaptive shift that could have negative implications for participants' social goal orientation in other settings, and therefore, other aspects of their lives could be negatively impacted if the trends here indicate a more general shift away from a social development orientation. Of particular concern is the role extended wilderness courses might play in fostering such a shift.

On the one hand, findings are unsurprising since, as an outdoor skill and leadership school, these outcomes are consistent with NOLS's mission and program descriptions. On the other hand, insofar as NOLS wishes to realize broader developmental outcomes for participating youth, the general decline in social development goal orientation from pre- to posttest might present an area for organizational reflection and development. Below, the way the data seem to accurately represent consistency between NOLS's mission and approach will be studied, before discussing nuances in the data that point to areas that should be of interest among outdoor adventure organizations promoting more general developmental outcomes.

> The mission of the National Outdoor Leadership School is to be the leading source and teacher of wilderness skills and leadership that serve people and the environment. The NOLS community—its staff students, trustees, and alumni—shares a commitment to wilderness, education, leadership, safety, community, and excellence. These values define and direct who we are, what we do, and how we do it (http://www.nols.edu/about/values.shtml).

This statement of mission and values reflects the educational institution NOLS strives to be. The emphasis is on teaching skills and leadership, a self-characterization that corresponds with NOLS's broader reputation. The mission does not purport to emphasize group cohesion and clearly states their primary goals as teaching wilderness skills and leadership. This can be contrasted with Outward Bound, which uses words such as "character development" and "compassion" in its mission statement.

Findings regarding students' perceptions of the social climate of their courses and related changes in social development orientations are perhaps best understood in light of NOLS's mission and values. In general, the average students perceiving average levels on all core social climate indicators, experi-

enced declines in social development goal orientation. A closer look, however, reveals interesting patterns that parallel a 2011 pilot study (Mirkin & Middleton, 2014) in suggesting cohesion and task orientation as elements of the social climate play an important part in fostering social development goals. Similar to the 2011 study, the present study also found that individual perceptions of cohesion and task orientation were related to increasing social development goal orientation change score while perceived leader control was negatively related and had a substantial impact on goodness-of-fit (Table 3). According to this model, courses wherein students had higher perceptions of group cohesion and task orientation combined with lower perceptions of leader control were more likely to have larger positive changes in their social development goal orientation change score.

In the fitted plot of the best-fit model (Figure 2), it was increasingly evident that both course level and individual level predictors had a meaningful impact on students' change in social development goal orientation. For the purpose of this graph, variables labeled high or low were one standard deviation above or below the mean score. It can be seen in this plot that fun, and the general way the group is facilitated in terms of fun/playfulness, task orientation, and leader control is substantially more influential to social development goal orientation than the makeup of the course. When students' perceived their courses as having high levels of leader control, the change in social development goal orientation moved in a negative direction. It appears that NOLS instructors emphasized what needed to be done, or stressed completing tasks, without

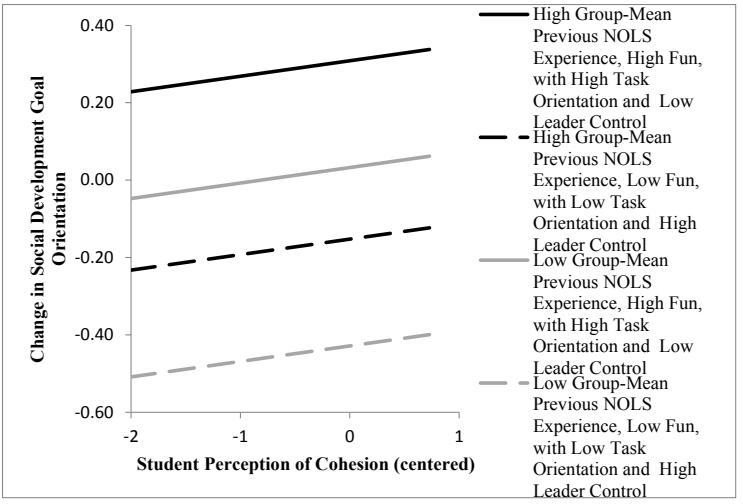

Figure 2. Fitted plot of best-fit model showing the impact of group-mean previous NOLS experience and instructor perception of fun/playfulness with varying levels of individual perceptions of task orientation, leader control, and cohesion on social development goal orientation change score.

controlling how they were done and without interfering with the social dynamics of the group; this had a positive relationship with adaptive changes in social motivation.

Students' perception of the task orientation of their group was thus related to changes in social development goal orientation. On average, when students perceived higher task orientation, it related to greater positive changes in social development goal orientation. In practical terms, a task-oriented group has the potential to keep participants focused on a common goal, which might not necessarily promote cohesion itself, but perhaps keeps the group maintaining functional relationships. This task-oriented group is the impression NOLS conveys in its literature and, consistent with its reputation and mission, this also appears to be one factor that facilitates social growth. This effect was heightened when combined with perceptions of cohesion and lower levels of leader control. Again, this is a core element that NOLS likely wants to maintain and maximize.

There are alternative explanations for the decline in social development goal orientation. One explanation for the negative change could be an instrumentation issues with Ryan's scale, perhaps people have a tendency to overestimate at pretest and this could be mitigated in the future by using a proxy pretest with this instrument and or reworking Ryan's instrument with the goal of lowering the mean scores. Another possible explanation is that high pretest scores have set a ceiling. Based on this author's pilot work (Mirkin & Middleton, 2014), which had similarly high pretests but significantly increased posttest scores, this does not seem to be the case. While the initial number, on average, is high, it has previously been demonstrated that it can and does increase after some experiences.

Course Level Previous Experience Predicts Change in Social Development Goals

Students who return to NOLS for a second course are likely to understand the mission and goals of the program as well as being practiced in the norms of "expedition behavior," and can help a participant group to function well together. At NOLS, expedition behavior, or "EB," is emphasized; in the *NOLS Leadership Educators Notebook* (2009) there is an entire chapter dedicated to it. The first article about EB, entitled "*Expedition Behavior: Creating a Positive Culture and Learning Environment on NOLS Courses*," concludes, "Be the kind of person others want as a tentmate on an expedition where you know you will be working hard together, through difficult challenges. Being a thoughtful, contributing member of a team" (Gookin & Leach, 2009, p. 16). It is plausible that if NOLS students return for a second course, they understand, support, and have benefitted from the idea of EB, and they are able to share that with their course both directly and also informally through modeling proper ex-

pedition behavior. Having individuals who have chosen to come back for a second NOLS course as part of the participant group positively influences the social climate, which appears to contribute to changes in social development goal orientation of participants.

Interpretation of Course Characteristics Influence on Group Social Climate

This section provides empirical evidence that should aid in making stronger, more precise claims about what practices and emphases specifically predict what outcomes, positively and negatively. There was nothing surprising in these findings. They correspond with various training manuals and matches common understandings of adventure programs. Persevering in the face of adversity, such as uncomfortable weather, helps bond a group by making them work together even to meet basic needs. It may simply be that this shared adversity fosters mutual respect and support among group members and this promotes cohesion, or it may yield a task focus during challenging times that helps people to work together and, as a result, form social bonds. Regardless of why uncomfortable weather helps increase group cohesion, it is helpful for instructors and organizations to realize the opportunity for cohesion in the difficulty that uncomfortable weather represents. Importantly, there might be limits to this: too much or too severe bad weather could cause a leader to exert more control, especially if risk management becomes a concern. There is probably a "right amount" of bad weather for the promotion of cohesion, and although impossible to program into a wilderness course, further research could examine what this right amount is and how to help achieve it by managing participants' perceptions and attitudes.

The finding that fun/playfulness has a meaningful impact also might influence practice in beneficial ways. This data supports the idea that when students are having fun, group cohesion is enhanced. This finding echoes both an unpublished pilot study from 2010 as well as a published pilot study from summer of 2011 (Mirkin, 2012) that used Adventure Treks courses as a sample, an organization that emphasizes fun as a primary goal. Adventure Treks courses had consistently high levels of cohesion, which positively related to changes in social development goals in that sample (Mirkin, 2012; Mirkin & Middleton, 2014).

The point here is not to suggest that NOLS should be more like Adventure Treks. Rather, for some organizations, it is suggested that this general finding across two studies points to areas that could be emphasized to engender fun and playfulness in outdoor programs, which even here predicted positive changes in a desired developmental outcome when it yielded perceptions of a cohesive group climate.

Lastly, predictors of leader control were investigated.The number of games played throughout the course negatively predicted increased perception of leader control, while "adversity" positively predicted leader control. As stated

previously, on average, leader control had negative effects on changes in social development goal orientation, meaning that less leader control has what can be thought of as a positive impact on the social climate of a course, with regard to changes in social development goals. On average, as adversity increased, so did leader control. In addition, an increased number of games played by the group were related to a reduced perception of leader control. Again, there appears to be a "right amount" of adversity—one that promotes a task orientation within a group, but does not become so much as to require excessive group management or intervention by the leader. How leaders achieve and mange this balance would be an interesting area for interview research or organizational self-study.

All of the results drawn from this section of data analysis and the related discussion make logical and intuitive sense while further providing explanation of key areas of the social climate. It seems to follow logically that fun/playfulness of a course and uncomfortable weather both tend to build cohesion, but likely for very different reasons. Increased rain on a course increases a group's task orientation; they need to get things done to stay warm and dry. Lastly, leader control, a negative predictor of changes in social development goal orientation, was negatively predicted by playing a greater number of games, and positively predicted by adversity. It appears that during courses with more adversity, instructors tend to take greater control, likely to help their group succeed or to manage environmental risks that are out of their control. Contrastingly, playing games seem to empower students to solve problems on their own while allowing leaders to step back and exert less control.

Areas for Future Research

This study contributed to or created several promising new areas for possible research:

- In a similar study to this one in terms of outcomes and predictors, utilizing a sample from different organizations with different missions, such as NOLS, Outward Bound, and Student Conservation Association in order to investigate how the mission of the organization and the nature of their programs relates to the social climate of its courses, and how this shapes outcomes (Kellert & Derr, 1998). Attending and observing staff training for each organization would also add depth to the analysis.
- An additional investigation of social climate, but in relationship to other developmental outcomes, such as the valued NOLS outcomes of communication, leadership, small group behavior, judgment in the outdoors, outdoor skills, and environmental awareness. This could create a greater understanding of social climate in relationship to different dependent variables, such as belief in leadership abilities. This could aid administrators in determining what aspects of the social climate should be focused on to enhance gains in students' beliefs about their leadership (or whatever outcome is deemed valuable) abilities, in light of different program goals.

- Use specific trainings (i.e., building group cohesion) with some instructor teams and not others, as a control group, to see if this impacts peer interaction.
- Create and test an "offset model" that focuses on the areas shown to be beneficial to group cohesion and overall gains in social development goal orientation.
- Include exit interviews to further understand the patterns discovered and ask the participants with the strongest effect why they answered the way they did. This could add a greater depth of understanding to what is occurring in the social climate or the individual that is facilitating growth.
- Additional investigations into the idea of the role of "fun" in development of youth. By exploring the role of fun, a greater understanding of its purpose in youth development settings could be further understood and applied.
- Continued investigation in to role of risk in group cohesion. It seems important to understand if there is a point where increased risk is no longer beneficial to participant development, in order to maximize developmental benefits without increasing risk for the sake of risk.

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